

CLAIMS

- 1 1. A method of transferring a packet of data on a network, said network
2 including a first subnetwork and a second subnetwork, said packet of data
3 being transferred from a source node on the first subnetwork to a
4 destination node on the first subnetwork, the first subnetwork being
5 connected to the second subnetwork such that the packet of data is
6 transferred across the second subnetwork between the source and
7 destination nodes on the first subnetwork, said packet of data having a first
8 header portion which is associated with the source and destination nodes
9 on the first subnetwork, said method comprising:
10 generating a value derived from the first header portion such that
11 said value is also associated with the source and destination nodes on the
12 first subnetwork;
13 providing the packet of data with a second header portion, the
14 second header portion including the value derived from the first header
15 portion; and
16 using the second header portion, selecting one of a plurality of
17 paths on the second subnetwork for forwarding of the packet.

- 1 2. The method of claim 1 wherein the first subnetwork is a virtual private
2 network.

- 1 3. The method of claim 2 wherein the second subnetwork is a portion of the
2 Internet.

- 1 4. The method of claim 1 wherein the second subnetwork is a portion of the
2 Internet.
- 1 5. The method of claim 1 wherein the first header portion is an Internet
2 protocol (IP) packet header.
- 1 6. The method of claim 5 wherein the second header portion is an IP packet
2 header.
- 1 7. The method of claim 1 wherein the first header portion is an Ethernet
2 packet header.
- 1 8. The method of claim 7 wherein the second header portion is an IP packet
2 header.
- 1 9. The method of claim 1 wherein the second header portion is an IP packet
2 header.
- 1 10. The method of claim 1 wherein the value is derived by performing a hash
2 operation on the first header portion.
- 1 11. The method of claim 10 wherein the hash operation is performed on
2 information in the first header portion related to addresses of the source
3 and destination nodes.

- 1 12. The method of claim 10 wherein the hash operation is performed on a
2 protocol field in the first header portion.
- 1 13. The method of claim 10 wherein the hash operation is performed on IP
2 source and destination addresses of the source and destination nodes,
3 respectively.
- 1 14. The method of claim 10 wherein the hash operation comprises performing
2 a division on the first header portion.
- 1 15. The method of claim 14 wherein the value is related to a remainder
2 generated by the division.
- 1 16. The method of claim 10 wherein the hash operation comprises a cyclic
2 redundancy check.
- 1 17. The method of claim 10 wherein the hash operation comprises a checksum
2 operation.
- 1 18. The method of claim 1 wherein the selecting step comprises performing a
2 hash operation on the second header portion.
- 1 19. An apparatus for transferring a packet of data on a network, said network
2 including a first subnetwork and a second subnetwork, said packet of data
3 being transferred from a source node on the first subnetwork to a
4 destination node on the first subnetwork, the first subnetwork being
5 connected to the second subnetwork such that the packet of data is

6 transferred across the second subnetwork between the source and
7 destination nodes on the first subnetwork, said packet of data having a first
8 header portion which is associated with the source and destination nodes
9 on the first subnetwork, said apparatus comprising a processing device for
10 (i) generating a value derived from the first header portion such that said
11 value is also associated with the source and destination nodes on the first
12 subnetwork, (ii) providing the packet of data with a second header portion,
13 the second header portion including the value derived from the first header
14 portion, and, (iii) using the second header portion, selecting one of a
15 plurality of paths on the second subnetwork for forwarding of the packet.

1 20. The apparatus of claim 19 wherein the processing device is located within a
2 network node between the first subnetwork and the second subnetwork.

1 21. The apparatus of claim 19 wherein the first subnetwork is a virtual private
2 network.

1 22. The apparatus of claim 21 wherein the second subnetwork is a portion of
2 the Internet.

1 23. The apparatus of claim 22 wherein the second subnetwork is a portion of
2 the Internet.

1 24. The apparatus of claim 19 wherein the first header portion is an Internet
2 protocol (IP) packet header.

1 25. The apparatus of claim 24 wherein the second header portion is an IP

2 packet header.

1 26. The apparatus of claim 19 wherein the first header portion is an Ethernet
2 packet header.

1 27. The apparatus of claim 26 wherein the second header portion is an IP
2 packet header.

1 28. The apparatus of claim 19 wherein the second header portion is an IP
2 packet header.

1 29. The apparatus of claim 19 wherein the processing device derives the value
2 by performing a hash operation on the first header portion.

1 30. The apparatus of claim 29 wherein the hash operation is performed on
2 information in the first header portion related to addresses of the source
3 and destination nodes.

1 31. The apparatus of claim 29 wherein the hash operation is performed on a
2 protocol field in the first header portion.

1 32. The apparatus of claim 29 wherein the hash operation is performed on IP
2 source and destination addresses of the source and destination nodes,
3 respectively.

1 33. The apparatus of claim 29 wherein the hash operation comprises
2 performing a division on the first header portion.

- 1 34. The apparatus of claim 33 wherein the value is related to a remainder
2 generated by the division.
- 1 35. The apparatus of claim 29 wherein the hash operation comprises a cyclic
2 redundancy check.
- 1 36. The apparatus of claim 29 wherein the hash operation comprises a
2 checksum operation.
- 1 37. The apparatus of claim 19 wherein, in selecting one of the plurality of
2 paths, the processing device performs a hash operation on the second
3 header portion.